

NOTES ON THE ZYGÆNIDÆ OF CUBA.

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PART II.—With a Supplement.

ISANTHRENE, Hübner.

Isanthrene chalciope.*Isanthrene chalciope*, Hübner, Zutr. 3rd Hund. p. 20, No. 235, figs. 469—470. (1825.)*Glaucopis (Isanthrene) chalciope*, Walker, C. B. M. Part I, p. 155. (1854.)*Glaucopis chalciope*, Lucas, Hist. Nat. Cub. p. 663. (1857.)*Glaucopis chalciope*, Herrich-Schaeffer, Corr. Bl. Reg. No. 8, p. 114. (August, 1866.)

Two specimens.

Habitat.—Cuba, (Poey.) Coll Ent. Soc. Phil.Number 136, *Poey's MS. Catalogue.*

HIPPOLA, Walker.

“*Hippola syntomoides.*”*Glaucopis syntomoides*, Boisd. Sp. Gen. Lep. Vol. I, Pl. 16, f. 4. (1836.)*Euchromla (Hippola) syntomoides*, Walk., C. B. M. Lep. Pt. 1, p. 227. (1854.)*Glaucopis syntomoides*, Lucas, Hist. Nat. Cub. p. 659. (1857.)*Glaucopis syntomoides*, Herrich-Schaeffer, Corr. Bl. No 8, p. 114. (August, 1866.)

The specimens do not agree well with Boisduval's figure, and the species has been nowhere described to my knowledge. Since Prof. Poey in his MS. Catalogue and Dr. Herrich-Schaeffer in the Corr. Blatt, both give the specific determination without doubt or remarks, I give it, provisionally, under the generic name proposed, by Mr. Walker in the British Museum Lists, for a number of dull cyaneous, albo-maculate Glaucopidians, which, though perhaps separable into distinct genera, may remain temporarily united by their coloration.

The specimens (♂ and ♀) sent by Prof. Poey, differ from Boisduval's figure of “*Glaucopis syntomoides*,” which apparently represents a male, as follows:—The wings are narrower and distinctly dotted with white at base. There is no white dot on the median vein at the middle of the wing as represented by Boisduval's figure. The white maculations are not so broad and prominent in the Cuban specimens and differ in slight details. In Boisduval's figure, the white at the base of the abdomen is carried entirely and evenly across as a broad band, whereas in the Cuban specimens, the white color is limited to the lateral glandular pouches, there being but a narrow line of white scales

edging the basal abdominal segment, inferiorly, above. Finally, the abdomen is spotted with white laterally in the Cuban specimens, and the antennæ are curved towards their tips, but the first character is scarcely discernible from above, and the last may have been unnaturally changed by the French artist for the reason, perhaps, that these were thought to look better straight or slightly and methodically curved than with the twists given them by Nature.

Perhaps it is hardly worth while considering whether a discordant figure, to which no description is appended, does or does not represent a certain insect, but I leave it to the Cuban Entomologists to decide the matter, and to retain or reject a specific name which rests on no safe foundation.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 298, *Poey's MS. Catalogue.*

In the structure of the corporal parts, "*Hippola syntomoides*" is closely allied to Hübner's *Isanthrene chalciope*.

Hippola minima, n. s. (Plate 5, fig. 6, ♂).

Size, small. Dull blackish, with a bright cyaneous shade which is very prominent on the abdomen above.

Primaries narrow, produced at apices; external margin very oblique, slightly rounded superiorly. A few white scales at base. At the middle of the wing, a white subquadrate spot below median nervure. A larger white spot at the base of the median nervules, filling the interspaces opposite the discal cell. Above and within this latter spot, and obliquely placed with regard to it, is a smaller one below costa. Secondaries, narrow, slightly rounded below apices, resembling primaries; an elongate white spot at base, subparallel with costa; beyond, an ovate, obliquely placed, similar spot, at about apical third.

Under surface of both pair, same as upper surface.

Head, well extended; eyes prominent. Palpi, slight, with a few whitish scales beneath; "front," blackish cyaneous.

Antennæ, moderate, not curved or twisted terminally, finely and evenly pectinate. The upper surface of the antennal stem is covered with brownish cyaneous scales, the under surface and pectinations are brown, with the last ones of quite a pale, somewhat yellowish shade. "Collar," blackish centrally, with very prominent white lateral spots. Tegulæ and thorax, blackish cyaneous, with white, lateral scale patches.

Abdomen, cyaneous, with two large, lateral, white maculations over the basal pouches. Laterally, the segments are spotted with white.

Legs, blackish cyaneous; hind tarsi fringed with longer concolorous hair, which extends above on the base of the tibiæ, these latter well developed. Exp. ♂, 0.95 inch. Length of body, 0.40 inch.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 594, *Poey's MS. Catalogue.*

This species is very much smaller than the preceding, and I consider it generically distinct, but it resembles it closely in ornamentation, and it would naturally be referred to *Hippola* in the present state of our knowledge of these interesting insects.

EMPYREUMA. Hübner.

Empyreuma pugione.

Empyreuma pugione, Hübner, Zutr. 1 Hund. p. 12, No. 21, figs. 41—42. (1818.)

Empyreuma lichas, H.-S., Corr. Blatt. No. 8 p. 115. (August, 1866.)

I purposely avoid giving further synonymy, owing to the fact that, while I see there are two closely allied species of *Empyreuma*, I have only one before me which I regard as intended by Hübner as above cited.

The Latin diagnosis given by Mr. Walker to "*Euchromia pugione.*" C. B. M. Lep. Het. Part 1, p. 211, 1854, agrees better with the Cuban specimens than that of "*Euchromia lichas*;" yet to this latter a specimen from Cuba is cited. The antennal tips in the Cuban specimens are brownish fulvous, ("antennæ apice fulvæ," *Walk.*) a character not indicated by Hübner, whose specimens came from St. Thomas; otherwise my specimens agree too nearly for me to doubt this determination. Mr. Walker has evidently separated two species and afterwards (C. B. M. Lep. Het. Part 7, p. 1622) gives the additional habitat of "Jamaica" for specimens of "*Empyreuma pugione*, *Walk.*," although at first giving only "South America" for "*Euchromia pugione*, *Walk.*," with the Latin diagnosis of which species my Cuban specimens agree. Herrich-Schaeffer determines the Cuban species as "*Empyrenma lichas*, *Cramer*," while Cramer's miserable figure (Pl. 45, f. B.) is quite useless in the matter of closely allied species; the specific name of *lichas*, is first used by Cramer for a species from St. Thomas. Fabricius gives Cramer's *Sphinx lichas*, as a synonym of *Zygaena pugione*, *Fabr.*, (*Sphinx pugione*, Linn. Syst. Nat. 2, 807, 45) and his diagnosis (Sp. Ins. Vol. II, p. 163, No. 33) agrees entirely with the Cuban specimens. Fabricius afterwards separates two species in his "Mantissa," giving no authority for his *Zygaena lichas*, *Fabr.*, (p. 104, No. 34) a name which is now used for a species which is not Cramer's *Sphinx lichas*, 45, B, but is, from the similarity of the diagnosis, *Euchromia lichas*, *Walk.* I am led to conjecture that Mr.

Walker's citations of *Empyreuma pugione*, *Hübner*, should be transferred to "*Euchromia pugione*," *Walk*; the two species will then be *Empyreuma lichas*, *Hübner*, (*Zygæna lichas*, *Fabr.*, (nec. *Cram.*) *Mant.* p. 104, 34,) and *Empyreuma pugione*, *Hübner*, (*Sphynx pugione*, *Linn.*, *Syst. Nat.*; *Zygæna pugione*, *Fabr.*, *Sp. Ins.* Vol. II, 163, 33; *Mant.* Vol. II, p. 105; *Sphynx lichas*, *Cramer*, *Pl.* 45, f. B.,) as which latter species I determine the Cuban specimens I have before me. The habitat of Mr. Walker's specimens of "*E. lichas*," will need confirmation, as it does not seem probable that the first species ("abdomen atrum, cingulis duabus aureis" and "alæ rufæ striga media viridi punctoque albo") is also Cuban.*

This genus is closely allied to the European *Zygæna*, *Fabr.*, and assists our comprehension of the homogeneity of the family *Zygænidæ* as here considered.

* I note here an erroneous determination of Mr. Walker's in the genus *Anisota*. *Hübner* (*Dryocampa*, *Harris*).

Dr. Harris (*Ins. Inj. Veg.*) has described our United States *Anisota rubicunda*. *Grote*, (*Dryocampa rubicunda*, *Paekard*) as *Dryocampa rubicunda*, taking the specific name from *Fabricius'* *Bombyx rubicunda*. This is evidently correct, our insect agreeing with *Fabricius'* diagnosis, which reads as follows:—

"69. B. alis reversis: anticis roseis; fascia lata flava.

Habitat in *Virginia*. Mus. Dom. Bosc.

Magnitudo *B. populi*. Antennæ pectinatæ, flavæ, apice nudæ. Corpus villosum, flavum. Alæ anticæ rosææ fascia flava, quæ imprimis ad costam extenditur. Posticæ flavescentes umbra tantum rosæa. Pedes rosei." *Ent. Syst.* Vol. III, p. 429, (1793.)

This species is described by Mr. Walker in *Supp. Cat. B. M. Lep. Het.* Part 2, (32) p. 574, (1865,) as *Dryocampa venusta*, *Walk.*, with the remark: "The rosy costal stripe of the fore wings distinguish it from *D. rubicunda*." But it is evident from *Fabricius'* description, that this very rosiness of the primaries is a character of his *B. rubicunda*, while his habitat is decisive. *Dryocampa venusta*, *Walk.*, must, therefore, be referred as synonym of *Anisota rubicunda*, while for the Brazilian representative of our species I propose the following name:—

***Anisota walkeri*, n. s.**

Dryocampa rubicunda† *Walk.*, *C. B. M. Lep. Het.* Part 6, p. 1497. (1855.)

Dryocampa Walkeri, *Grote*, MS.—

"Fœm. Flava; palpi pedesque rosei; antennæ basi rosææ; alæ apud marginæa rosææ.

Female.—Yellow. Palpi and legs mostly rose-color. Antennæ rose-color at the base. Fore wings of a delicate bright rosé-color about the base and on the costa and along the exterior border. Hind wings rose-color along the costa and along the apical part of the interior border. Length of the body 7—8 lines; of the wings 22—24 lines.

Var. β. Hind wings with a broad, pale, marginal, rose-colored band, extending from near the tip of the costa to half the length of the interior border."

Habitat.—"Brazil," (*Walker*.)

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 155, Poey's MS. Catalogue.

ECHETA, H-S.

Echeta albipennis.

Echeta albipennis, H-S., Corr. Bl. Reg. No. 8, p. 117. (August, 1866.)

This genus reminds one of *Scepsis*, Walk. *E. albipennis*, is unusually light-colored; the primaries are whitish above, except a brownish longitudinal stripe along internal margin.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 706, Poey's MS. Catalogue.

Echeta subochrea.

Correbia subochrea, H-S., Corr. Bl. Reg. No. 8, p. 115. (August, 1866.)

I have a single male specimen of this species before me with mutilated secondaries. In size it resembles *E. albipennis*, and approaches that species so nearly in the structure of the body and appendages, that I am disposed to regard the two species as congenerical.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 157, Poey's MS. Catalogue.

CALONOTOS, Hübner.

Calonotos thetis.

Sphinx Thetis, Linn., Mant. 1. 539.

Sphinx Thetis, Drury, Ill. Ex. Ent. Vol. I, p. 57, Pl. 26, fig. 4. (1770.)

Zygæna Thetis, Fabr., Sp. Ins. Vol. II, p. 160, No. 13. (1781.)

Zygæna Thetis, Fabr., Mant. Ins. Vol. II, p. 103, No. 15. (1787.)

Sphinx Leneus, Cramer, Exot. Vol. III, p. 95, Pl. 248, fig. G. (1782.)

Zygæna Thetis, Fabr., Ent. Syst. Vol. III, p. 391, No. 17. (1793.)

Calonotos Thetis, Hübner, Verz. Schm. p. 123, No. 1331. (1816.)

Zygæna? Thetis, Westwood, Drury Ex. p. 52, Pl. 26, fig. 4. (1837.)

Euchromia Thetis, Walker, C. B. M. Lep. Het. Part 1, p. 262. (1854.)

Glaucopsis Thetis, Lucas, in R. d. l. Sagra Hist. Cub. p. 667. (1857.)

Charidea thetis, Herrich-Schaeffer, Corr. Bl. Reg. No. 8, p. 116. (August, 1866.)

Three specimens (♂ and ♀) examined.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 167, Poey's MS. Catalogue.

ACLYTIA, Hübner.

Aclytia heber.

Sphinx Heber, Cramer, Pap. Ex. Vol. III, p. 169, Pl. 287, fig. A. (1782.)

Sphinx Halys, Cramer, Pap. Ex. Vol. IV, p. 129, Pl. 357, fig. C. (1782.)

Aclytia Halys, Hübner, Verz. Schm. p. 123, No. 1337. (1816.)

Aclytia Heber, Hübner, Verz. Schm. p. 123, No. 1338. (1816.)

Euchromia Halys, Walker, C. B. M. Lep. Het. Pt. 1, p. 243. (1854.)

Euchromia Heber, Walker, C. B. M. Lep. Het. Pt. 1, p. 244. (1854.)

Autochloris heber, Herrich-Schaeffer, Corr. Bl. Reg. No. 8, p. 115. (August, 1866.)

Four specimens (♂♂ ♀♀) examined. Prof. Poey sends the form

figured by Cramer in his last Volume under the name of *Halys*, as the female of this species. Hübner's genus is erected for these two species of Cramer's, which Mr. Walker has introduced into different Groups of his genus "Euchromia," without, however, being autoptically acquainted with both forms.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 153, *Poey's MS. Catalogue.*

APISTOSIA, Hübner.

Apistosis humeralis, n. s.

Apistosis judas† Herrich-Schæffer, (nec. Hüb. Zutr.) C. B. Reg. No. 8, p. 120. (August, 1866.)

Head, above and beneath, palpi and prothoracic parts, orange-yellow. Maxillæ, rather long, blackish. Antennæ, dull brownish, simple or nearly so. Thoracic disc, orange-yellow, of a little paler shade than the "collar" and caputal parts. Tegulæ, concolorous with the wings, discolorous with the thorax, blackish, margined and overlaid or shaded with bluish-green scintellate scales. Abdomen concolorous with the wings, dull obscure blackish or brownish, with prominent bluish-green reflections equally disposed, but less apparent on the under surface in the female. Terminally, in the male, the genital appendages and anal segments are clothed with yellow scales; beneath, the anal segment is provided with two prominent orange sub-lateral tufts of longer scales; centrally, the lateral claspers have darker, scintellate scales. In the female, the abdomen terminates acutely and a pre-anal orange-yellow band is continued entirely around, the extremity of the abdomen being blackish and scintellate. Legs, blackish, scintellate; in the male, the yellow color of the prothoracic parts beneath, extends over anterior and middle coxæ and femora.

Wings, entirely dull obscure brownish or blackish, with an evenly disposed metallic reflection, which varies from bluish to greenish according as the light falls on the wings. The primaries are more brilliant than the secondaries. Beneath, the same as above, but the reflection is hardly so prominent. Exp. ♂, 1.50, ♀, 1.80 inch. Length of body, ♂, 0.50, ♀, 0.55 inch.

Habitat.—Cuba. (Poey.) Coll. Ent. Soc. Phil.

Number 318, *Poey's MS. Catalogue.*

Nearly resembles the Brazilian *Apistosis judas*, *Hübner*, but is a slightly larger species, differing by the terminal abdominal coloration and prominently by the dark patagia, which, in Hübner's figure and as expressed by Walker's diagnosis, are concolorous with the rest of the thorax and yellow.

URANOPHORA, Hübner.**Uranophora chalybea.**

Uranophora chalybea, Hübner, Zutr. 3tes Hund. p. 14. No. 220. figs. 439—440. (1825).

Apistosis? terminalis, Walker, C. B. M. Lep. Het. Pt. 2, p. 478. (1854).

Charideu chalybea, Herrich-Schaeffer, Corr. Bl. Reg. No. 8, p. 116. (August, 1866).

Hübner gives "Cuba," as the habitat of his specimen. The figures of the species in the "Zutræge," seem too highly colored when compared with the specimens sent by Prof. Poey, while agreeing in the main with the representation of Hübner's species, as well as with Mr. Walker's description above cited.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 319, *Poey's MS. Catalogue.*

CTENUCHIDIA, Grote.**Ctenuchidia virgo.**

Ctenucha? virgo, Herrich-Schaeffer, Lep. Ex. p. 74, fig. 301. (1850—1858).

Mevania? subcyanea, Walker, C. B. M. Lep. Het. Pt. 2, p. 443. (1854).

Ctenuchidia virgo, Grote, Notes Bombyc. Cuba, p. 1. (Luj. scrip. Dec., 1865).

Ctenuchidia virgo, Herrich-Schaeffer, Cor. Bl. Reg. No. 9, p. 132. (September, 1866).

This genus is beautifully illustrative of the affinities of the spotted Pericopid genera with *Apistosis*, *Ctenucha* and *Uranophora*. Mr. Walker's description, above cited, appears to belong here, and is so referred by Dr. Herrich-Schaeffer. *C. virgo*, however, cannot be referred. I should think, as congenerical with *Mevania quadricolor*, *Walk.*; while Mr. Walker, after doubtfully referring his species to *Mevania*, adds: "this species may form a new genus." If distinct from *C. virgo*, Mr. Walker's species may be known as *Ctenuchidia subcyanea*; and this name might obtain for the present species in the case Mr. Walker's specific name prove earlier than Herrich-Schaeffer's, for, although I believe it to be later, I have no means of critically pronouncing upon the matter from the data furnished by the work of the latter author.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 154, *Poey's MS. Catalogue.*

COMPOSIA, Hübner.**Composia fidelissima.**

Composia fidelissima, Herrich-Schaeffer, Cor. Bl. Reg. No. 9, p. 132. (September, 1866).

I have examined several specimens of this interesting and beautiful species which is regarded by Dr. Herrich-Schaeffer (l. c.) as undoubtedly congeneric with *C. credula*, *Hübner*, the latter a species which I

only know from Hübner's figures. The male of *C. fidelissima*, is smaller than the opposite sex, which it resembles quite closely in ornamentation; the antennæ are finely and rather shortly bi-pectinate, the pectinations becoming obsolete at the base and tapering to the tips. The dark blue color of the secondaries reminds one of *Ctenucha* and *Ctenuchidia*; the scarlet costal spots at base of primaries are shared by the following genus.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 596, *Poey's MS. Catalogue.*

SPHÆROMACHIA, n. g.

Head, small, held on a line with the body, not depressed, though but slightly advanced and improminent, owing to the very narrow, reduced, prothoracic pieces. Labial palpi rather long, finely scaled, porrect, advanced before the "front" which they exceed. Maxillæ, short and slight. Legs, weak, unarmed. All the corporal parts are finely and thinly scaled, so as to show the structure of the body crust more plainly than usual. Thorax, globose, rather short, so that, with the small head, it is hardly half the length of the abdomen. Basal abdominal segment a little constricted, the lateral glandular pouches are spherical and prominent. Abdomen, cylindrical, long, linear, not wider (♀) than thorax, evenly distended and terminating rather bluntly without anal pilosities; the segments are broader than usual.

Primaries, broad, large, triangulate; costa arched to apex which is not produced as in *Composita*, *Pericopis*, etc., but is blunt, the external margin being extraordinarily straight, very slightly rounded at internal angle, while the internal margin is longer than usual and very straight. In shape the wing thus approaches very nearly a right-angled triangle, of which the costa would be the hypotheneuse. The first, second and third m. nervules are thrown off, at nearly equal intervals, at the extremity of the nervure; they are near together at base, and short, the second runs very straightly to external margin, the first and third, on either side of the second, are opposedly arcuate. The discal fold is prolonged beyond the closed discal cell, and is continued on the interspace above first m. nervule. The fourth m. nervule is very widely separated from the third at base, since it springs from the nervure at a point about midway between the base and the point of origin of the third m. nervule; it runs straightly to the margin, but the interspace, which is very wide at base, is narrowed towards the margin, owing to the arcuation of the third m. nervule and its downward course. A prominent sub-median fold, parallel with internal margin and continu-

ed. Internal, or sub-median nervure, nearly straight and parallel with the margin.

Secondaries, large, somewhat pyriform; costa long, straight, depressed towards the apex, which latter is blunt but rather produced; external margin rounded, a little produced medially; anal angle improminent; internal margin straight. The nervulation recalls *Callalucia*; the second and third m. nervules spring from one point at the extremity of the nervure; first, a little removed, springs from the cross-vein which closes the discal cell; fourth, at a point about two-thirds of the length of the nervure from the base, thus its position is here much nearer removed towards the extremity of the m. nervure, than its analogue of the primaries. This removal of the fourth m. nervule towards the base of the nervure, seems to influence the shape of the anterior wings.

This finely and thinly scaled genus is very distinct, in the shape of the wings, from any of the genera allied to *Pericopsis*, that I have been able to compare, and is readily distinguished from that genus by the singularly straight external margin of the primaries and their triangular shape.

Sphæromachia cubana.

Pericopsis cubana, Herrich-Schaeffer, C. B. Reg. No. 9, p. 131. (September, 1866).

♀. Head, blackish, with two lateral white bands on the "front," behind the antennal insertions are two white dots. "Collar," blackish, dotted with white. Thorax and patagia, anteriorly, blackish dotted with white; behind, the thoracic parts are very pale greenish-yellow. Abdomen, very pale greenish-yellow, without markings, except a lateral, brownish, distinct, stigmatal line. Legs and under thoracic surface, pale, the former striped with blackish or brownish outwardly.

Wings, sub-diaphanous, very pale greenish-yellow. Primaries blackish along costa to basal third; these dark scales are margined inferiorly by the median nervure, and enclose three scarlet patches, which are fused on the under surface and here hardly disconnected. At the extremity of this dark costal patch, the dark scales are continued downwards, forming a distinct oblique band, joining the internal margin near the angle and fusing with the dark terminal color of the wing. Beyond this, the ground color of the wing forms a coincident, broad, oblique band. Terminally, the wing is blackish, the dark space being very wide on costa, commencing at about its middle, and very narrow at internal margin where it merely covers the angle. Superiorly, two sub-equal, oblique, sub-diaphanous, broad, pale bands, intersected by

the s. c. nervules. Along and within external margin, three or four interspaceal, unequal, pale spots. Secondaries with a narrow, rather even brownish-black band along external margin, enclosing a larger, pale, apical spot, and three or four smaller, triangular spots before anal angle. Expanse, ♀, 2.60 inches. Length of body, 1.00 inch.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 597, Poey's MS. Catalogue.

MELANCHROIA, Hübner.

Melanchroia fumosa, n. s.

♂, ♀. Smoky black. Head and thorax dark honey-yellow, legs pale smoky; abdomen, above, smoky black, beneath, except centrally, honey-yellow, a little paler than thorax. Antennæ, smoky black. The anal valves in the male are very long and prominent, clothed with honey-yellow scales and laterally at their base with paler spreading scales.

Primaries, smoky black, all the "veins" brought distinctly into relief by paler scales, an apical white patch; fringes, except where bordering the white apices, dark.

Under surface resembling upper, except that the veins are not marked with paler scales.

Secondaries, smoky black, immaculate; fringes at apices broadly marked with white. Under surface resembling upper. In the single ♂ specimen I have before me, the "veins" on the under surface are beautifully brought into relief by pale scales, unlike the female in this respect, and more distinctly than on the upper surface of primaries in either sex, perhaps partly owing to the somewhat darker hue of the posterior wings. Expanse, ♂ and ♀, 1.50 inch. Length of body, 0.60 inch.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 599, Poey's MS. Catalogue.

In size and ornamentation this species bears a close resemblance to *M. cephise*, Hübner ("Verzeichniss"). It differs by the absence of the intense blue-black color of the wings which is expressed by Cramer, who originally figures the species, in the words: "sur le fond noir se trouve un chatoyant bleu obscur."—Exot. Vol. IV, p. 182. I have a specimen from Mexico, which I owe to the kindness of Mr. W. H. Edwards, which has this peculiar blue-black ground color, and differs in this respect from the Cuban species, as well as by certain less prominent and comparative characters, so far as I can judge from a single specimen. The general color of the two insects is very distinct, when compared together.

Melanchroia cephise, *Hübner*, "Sammlung," (not "Verzeichniss") seems to me to represent the smoky black *M. fumosa*, and not the blue-black *Phalæna cephise*, *Cramer*, contrary to the intention of the German Entomologist, who intended to illustrate *Cramer's* species.

Melanchroia geometroides.

Melanchroia geometroides, Walker, C. B. M. Lep. Het. Part 2, p. 387. (1854).

Glaucopis mors, Lucas, Hist. Nat. Cub. p. 663. (1857).

Mr. Walker gives "Java," as the habitat of this species in the British Museum Lists. The diagnosis there given agreeing exactly with my specimens, I was led to doubt the correctness of this locality, the more so as I regarded the genus as purely American in its character. Upon communicating by letter with Mr. Walker on the subject, I have been kindly informed that there is every probability that the British Museum specimens came from Jamaica, and that a mistake has arisen from the similarity of the customary abbreviations for these two localities. I have examined several specimens (♂ and ♀) of this slightly variable but very simply marked species, which I have no doubt, from the diagnosis, has been redescribed by Lucas as above cited.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 483, *Poey's MS. Catalogue*.

DIOPTIS, *Hübner*.

Dioptis vinosa.

Sphinx vinosa, Drury, Exot. Vol. I, p. 47, Pl. 23, fig. 4, et Vol. II, App. (1770).

Callimorpha? vinosa, Westwood, Drury, Vol. I, p. 43, Pl. 23, fig. 4. (1837).

Dioptis vinosa, Walker, C. B. M. Lep. Het. Part 2, p. 332. (1854).

Hyalurga vinosa, Herrich-Schaeffer, Cor. B. M. Reg. No. 9, p. 131. (September, 1866).

I adopt Mr. Walker's generic determination for this species, since this is apparently congeneric with *D. cyma*, *Hüb.* the type of *Dioptis* in the "Verzeichniss." Other species and groups referred here by Mr. Walker, seem to need revision. *D. vinosa*, is variable as to color and size; sometimes the sub-terminal, oblique, ferruginous or honey-yellow band, of the upper surface, is entirely obsolete. Its variability suggests, that *Dioptis rica*, *Hübner*, has been improperly considered as distinct from the present, the oldest illustration of the genus.

Habitat.—Cuba, (Poey). Coll. Ent. Soc. Phil.

Number 204, *Poey's MS. Catalogue*.

SUPPLEMENT.

With the present Paper I close my Notes on the first families of Cuban Moths, as represented by Prof. Poey's Collection. I have been fortunate in having the independent observations of Dr. Herrich-Schaeffer, of Regensburg, on very similar material, sent by Dr. Gundlach, and it affords me pleasure to see that we have nearly always coincided in our specific determinations, that is to say as to what species were new to science, or had been previously recognized by Authors. With regard to our generic and family determinations, I have not been so fortunate as to agree with this distinguished Entomologist. It remains for me but to direct the attention of the student to the classificatory arrangement of the Sub-Order by Dr. Herrich-Schaeffer in the "Lep. Exot. Nov. etc.," in order to account for classificatory views, which, since they are singular with the Bavarian Entomologist, must be my apology for the want of unity displayed by our respective Papers as to the natural arrangement of the material therein discussed. I shall content myself for the present with a few remarks as to the artificiality and incongruity of one of Dr. Herrich-Schaeffer's generic groups, leaving my comprehension of the most natural arrangement of these Moths as discussed in my Papers, and as expressed in the succeeding list of the Cuban species of Sphingidæ, Ægeridæ, Zygaenidæ and Bombycidæ.

And first in correction; Dr. Herrich-Schaeffer (Corr. Bl. No. 3, Aug. 1866, p. 117) says: "Im Eingange sagt er dass er *Melanchroia* und *Ctenuchidia (virgo)* zu der Subfamilie der *Lithosiinen* setzt," etc. This is speaking of my paper on the Bombycidæ of Cuba, where in the Introduction exactly the reverse of what Dr. Herrich-Schaeffer says is recorded. I wrote: "When we separate from this Family the Zygaenid genera, *Melanchroia*, *Ctenuchidia*," etc., showing that I did not consider these genera as Lithosians but as Zygaenidæ, and they will be found arranged with the other genera of the latter Family.

Dr. Herrich-Schaeffer's genus "*Charidea*," contains not only perfectly dissonant material, but even species belonging to two very natural and distinct Families, viz: Zygaenidæ and Bombycidæ. Typically considered, Dalman's genus is Zygaenid, and should be limited to species such as *C. fulgida*, *C. bivulnera*, *C. splendida*, *C. fulgens*, *C. fastuosa*, etc. In the Corr. Blatt, No. 8 (Aug. 1866), p. 116, Dr. Herrich-Schaeffer refers *Erithales guacolda*, *Poey*, *Uranophora chalybea*, *Hübner*, and *Carathis gortynoides*, *Grote*, with other equally ill-selected material, to *Charidea*; whereas the first and last are dis-

inct genera of Bombycidæ, and the second is a Zygænid allied to *Apistosia*, *Ctenucha* and *Ctenuchidia*, but affording a distinct generic type.

No characters of generic or family significance hold together *Urano-phora* and *Carathis*; as well might both be referred to *Sphinx*, as to *Charidea*. I have altered the position of *Carathis* to the sub-family *Aretiidæ*, where I am satisfied it most naturally stands. It is a difficult genus of unusual habitus, and the characters which induce my present reference are those which ally it to *Eupseudosoma*, and allied genera. But both *Carathis* and *Erithales* are valid genera, and both belong to the family Bombycidæ. Dr. Herrich-Schaeffer is then accountable for his fresh synonyms of these species which had been previously properly named by Authors.

Owing to the circumstance that Dr. Herrich-Schaeffer and myself were contemporaneously engaged in writing on these Moths, the following synonyms have occurred, which I here enumerate in the order in which the insects were given in the pages of the *Correspondenz Blatt*:

BURTIA, Grote.

Burtia rubella. Grote. (Plate 5, fig. 1, ♂.)

Burtia rubella, Grote, *Notes Zyg. Cub. Part I*, P. E. S. P. Vol. 6, p. 186, (14.)
(July, 1866.)

Gundlachia eruenta, Herrich-Schaeff., *Corr. Bl. No. 7*, p. 108. (July, 1866.)

The name *Gundlachia*,* having been previously used in Mollusca, the name which I have given to this species, at the same time, will be properly retained. There is also a "*Glaucopis eruenta*, Perty," which might cause confusion in the specific name proposed for this species by Dr. Herrich-Schaeffer.

*This name has also been provisionally used by Mr. E. T. Cresson for a genus of Cuban hymenoptera.

I have since received three fresh (♂) specimens of *B. rubella*, from Dr. Gundlach, differing from my original specimens as follows: the legs, though "whitish" inwardly, are outwardly entirely sanguineous. The slender palpi are held apart and are projected beyond the "front." The two sanguineous spots of the primaries are obsolete. The anal hairs and margins of the wings are blackish, not "brown." These differences are partly to be attributed to inconstancy and partly to the condition of the original specimens in which the palpi were defective. This species, with its bright crimson or sanguineous body and frail, vitreous, narrowly margined wings, is unusually beautiful in appearance, even when compared with its brilliant associates.

HORAMA, Hübner.

Horama diffissa, Grote. (Plate 5, fig. 2, ♂.)

Horama diffissa, Grote, Notes Zyg. Cub. Part 1, P. E. S. P. Vol. 6, p. 181 (9.)
(July, 1866.)

Horamia pretellus, H-S., Corr. Blatt, No. 8, p. 113. (Aug., 1866.)

CALLICARUS, Grote.

Callicarus pennipes, Grote. (Plate 5, fig. 3, ♂.)

Callicarus pennipes, Grote, Notes Zyg. Cub. Part 1, P. E. S. P. Vol. 6, p. 182
(10.) (July, 1866.)

Horamia plumosa, H-S., Corr. Blatt, No. 8, p. 113. (Aug., 1866.)

It will be seen that both Dr. Herrich-Schaeffer and myself have separated as new and distinct these Cuban species, which resemble the long since described *Horama pretus*, *Cram.* sp., and *Callicarus plumipes*, *Drury* sp. In addition, I have shown the existence of a third species, *Callicarus texanus*, *Grote*, from Texas. The two genera are amply distinct in my opinion. By an error of spelling, apparently copied from Walker, Dr. Herrich-Schaeffer gives Hübner's genus as "*Horamia*."

EUNOMIA, Hübner.

Eunomia insularis, Grote. (Plate 5, fig. 4, ♂.)

Eunomia insularis, Grote, Notes Zyg. Cub. Part I, P. E. S. P. Vol. 6, p. 188
(16.) (July, 1866.)

Glaucopis elegantula, H-S., Corr. Blatt, No. 8, p. 114. (Aug., 1866.)

On the accompanying Plate (fig. 5 ♀) I also illustrate *Formiculus pygmaeus*, *Grote*.

EUSCIRRHOPTERUS, Grote.

Euscirrhopterus poeyi, Grote.

Euscirrhopterus poeyi, Grote, Notes Zyg. Cub. Part 1, P. E. S. P. Vol. 6, p. 178 (6.) (July, 1866.)

Heterandra disparilis, H-S., Corr. Blatt, No. 9, p. 134. (Sept., 1866.)

I have received, through the kindness of Dr. Gundlach and Sen. Rafael Arango, specimens of the following species of Cuban Lepidoptera:

MACROSILA, Bois. (Emend. m.)

Macrosila afflicta.

Sphinx afflicta, Grote, Notes Sphing. Cuba, p. 39. (August 1865.)

Szygyia afflicta, G. & R., Syn. Cat. N. Am. Sphing. p. 41, Pl. 3, fig. 5 ♂.
(Nov. 1865.)

Macrosila afflicta, Walker, C. B. M. Lep. Het. Pt. 35, p. 1855. (June 1866.)

♀. A female specimen of this species, sent me by Sen. Rafael Arango, differs from the male described by me, as above cited, in the obscure green tint of the ground color of the upper surface of primaries and body parts. Also, in that there are five lateral orange yellow abdomi-

nal segmentary maculations, distinctly margined with black scales. The species is nearly allied to *M. carolina*, but is smaller than Linnæus' species, and at once distinguished by its 'different color. The resemblance between these two species is analogous to that existing between *Amphonyx antæus*, and *A. duponchel*. I have been misled by the stained and defective state of the original (♂) specimen sent by Prof. Poey, and from which the figure of *S. afflicta*, as above cited, was taken. With the corrections here noted, the specific diagnosis and figure will sufficiently serve to identify the species.

Mr. C. T. Robinson has called my attention to the fact that in its maxillary and other characters, this species agrees with *Macrosila*, as restricted by myself in late papers, and that the genus *Syzygia*, is not sufficiently distinct to be received as an independent structural form. The determination of this species remains, then, as proposed by Mr. Walker in the British Museum Lists, and the genus *Syzygia* is withdrawn. The species of *Macrosila*, as now amended, are as follows:

GROUP I.

1. *M. aper*, *Boisd.*, II-S.!
- TYPE. 2. *M. rustica*, *Walk.*! (*Sphinx rus.*, Fabr., *Sph. chionanthi*, Smith).
3. *M. ochus*, *Grote*! (*Sphinx och.*, Klug; *Macr. instita*, Clemens).
4. *M. afflicta*, *Walk.*! (*Sphinx affl.*, Grote).
5. *M. carolina*, *Clemens*! (*Sphinx carolina*, Linn).
6. *M. quinquemaculata*, *Clem.*! (*Sphinx quinquem.*, Haworth; *Phlegethontius celeus*, Hübner; *Macr. celeus*, G. & R).

GROUP II.

7. *M. cingulata*, *Clemens*! (*Sphinx cing.*, Fabr.; *Sph. convolvuli*† Drury, Smith; *Sph. druroci*, Donovan, Steph., Wood).
8. *M. convolvuli*, *G. & R.*! (*Sphinx convol.*, Linn).

For the sequence of the initiatory genera of the Tribe *Sphingini*, I refer here to a recent Paper by Mr. Robinson and myself, contained in the Annals of the New York Lyceum, October, 1866. In this paper the position of the European *Sphinx ligustri*, *Linn.*, is discussed with regard to the North American species of the genus. The elimination of the genus *Diludia*, *G. & R.*, renders the respective homogeneity of *Macrosila* and *Sphinx*, as now considered, sufficiently apparent, as to justify the view that these two latter are distinct structural forms. The North American species hitherto referred to *Dolba*, *Walk.*, and *Hyloicus*, *Hübner*, may in future need a generic revision. *Hyloicus coniferarum*, *Hübner*, as illustrated by Abbot, has not been identified by us; the probability has been already suggested that *Ellema harrisii*, *Clem.*, is the species intended by Abbot.

CROCOTA, Hübner.

Crocota pallicornis, n. s.

Wings, full; size, moderate. Primaries dark ferruginous tawny, a little paler subterminally, with obsolete ornamentation. Costa arched from base to apex, the latter a little depressed. External margin nearly straight, a little rounded, hardly oblique. At extreme base a small aggregation of white scales, and the wing seems to be dusted very sparsely with whitish scales. A blackish discoloration beyond the discal cell, and one, fainter and smaller, situate above internal nervure. The subterminal space is indicated by a paler shade, which is rather distinctly margined inwardly, the wing gradually deepening in color again to external margin. Secondaries, pale dull rosy or reddish ochreous, contrasting with the dark primaries and general color; a blackish discal dot and one before the anal angle.

Head, palpi and thorax, dark ferruginous tawny; palpi, approximate at the tips, projected horizontally; the head is rather small. Antennæ, moderate, rather short and stout, covered with dull, obscure whitish scales, which are characteristic. Abdomen, above, concolorous with secondaries.

Under surface of the wings dull, reddish orange; primaries a little the darker; a blackish, discal dot on both pair, otherwise immaculate. Legs and under surface of abdomen, a little darker than primaries beneath; the former are mostly dull brownish externally. Exp. ♀, 1.10 inch. Length of body, 0.45 inch.

Habitat.—Cuba, (Gundlach).

Number 604, *Gundlach's MS. Catalogue.*

C. pallicornis, is the third Cuban species of the genus described. It is more nearly allied to *C. disparilis*, *Grote*, than to *C. heros*, but the thick, whitish antennæ and very different ornamentation will separate the two sufficiently. From what I have seen I conjecture that the Cuban *Crocotas* are more constant in their ornamentation than our United States species, but I would draw the attention of the Cuban Entomologists to the fact of the known variability of species of this genus, so that they may avoid the erection of species on slight differences, as has been done with regard to our species from the Atlantic District.* I would finally mention the circumstance that, in the set

* Dr. Herrich-Schaeffer, speaking of the Cuban *C. heros*, *Grote*, and *C. disparilis*, *Grote*, (Corr. Bl. p. 118. No. 8, Aug. 1866) says: "Ausser diesen beiden cubanischen Arten besitze ich 7 aus den Vereinigten Staaten, zu deren drei ich keine Beschreibung finden kann, welche aber möglicher Weise zum Theil oder alle den Arten von Reakirt entsprechen." With a numerous series of spe-

specimen of *C. pallicornis*, when the two blackish discolorations of the primaries are considered with the two dots on the secondaries, an imaginary line may be drawn, nearly straight, slightly bent inwardly, so as to include these four maculations.

specimens before me, I am strongly inclined to doubt the existence of so many species from the Atlantic District of the United States. Judging from my material and Hübner's figures of *Eubaphe aurantica*, and *Crocota rubicundaria*, I should refer both of these (as well as probably Mr. Walker's *C. rubicundaria*) as forms of the common *C. ferruginosa*, *Walk.* Indeed, where writers have referred to *C. rubicundaria*, I think their material has been immaculate specimens of this species of Mr. Walker's. As early as April, 1863, I have shown in these Proceedings, Vol. 2, p. 34, that Dr. Clemens' opinion, that the *Aretia rubricosa* of Harris was referable to *Crocota*, and was a "variable insect," was based upon a mistake, since Harris' species belongs to the very distinct genus *Phragmatobia*, *Stephens.* At that time, also, I determined specimens in the Coll. of the Ent. Soc. as "*Phragmatobia (Aretia) rubricosa*, Harris," as will be seen by reference to the list of species, given as determined by myself, on page 23 of the same Volume, under date of April 1863.

Leaving *Crocota treatii*, *Grote*, from present consideration, since this species is very distinct from any of the rest of the genus by its lithosiiform appearance and coloration (resembling somewhat the insect figured as "*Lithosia læta*, *Boisd.*" in Guérin.) I cannot find more than two species in the slight, tawny, specimens which belong to the more geometriiform group of the genus, and are found from Maine to Georgia. These are the *C. ferruginosa* and *C. brevicornis* of Mr. Walker, to which I would refer also Hübner's two figures under distinct names, as varieties. Dr. Packard has given nearer details respecting these species in his "Synopsis," and my own material bears them out. I have even specimens of *C. ferruginosa*, with the "paler round spots quite distinct, reminding us of *C. quinaria*." This latter species I have illustrated typically from a Canadian specimen with five pale blotches on the upper surface of the primaries; I have it now from Texas and Virginia, with three, two, and obsolete blotches. It will be recognized by the obliquity of the external margin of primaries and the heavier body compared with the two above cited species of Mr. Walker. It comes nearer to the Cuban species I have described, in the stoutness of the corporal parts, and especially to *C. disparilis*, *Grote*, but has narrower wings, etc., than that species.

It is not possible to do otherwise than to refer here *C. choroïna*, *Reakirt*, as a synonymia, when we consider the known variability of *C. quinaria*. Indeed, without near details as to the comparative shape of the wings, etc., it will not be possible to describe species of *Crocota*, so that they may be identified unless, indeed, at the same time giving figures, and in this view it may be properly said, that the "Contributions towards a Monograph of the genus *Crocota*," by Mr. Tryon Reakirt, will not become available to the future Monographist of the genus, whose task is, indeed, no enviable one.

Finally, *C. opella*, *Grote*, may be readily distinguished by its large size, heavier and most aretiiform habitus, and its simple ornamentation. It varies from the typical form which I have figured, and in which the primaries are darkest, the secondaries most reddish, with bright reddish under surface, through a variety of shades of obscure brownish to almost entirely

ECPANTHERIA, Hübner.

Ecpantheria cyaneicornis, n. s.

I have but a fragment of a male specimen of this species before me, which is at once distinguished from the only other described Cuban species of the genus, *E. albicornis*, *Grote*, by the dark bluish black antennæ. The primaries are white with six series of blackish sub-cyaneous, or brownish transverse annulations and spots, broadly marked on costa. The third band shows a very distinct and large sub-quadrate costal blotch spreading over the outer extremity of the discal cell, and covering the discal cross-vein, the latter covered with darker scales so as to resemble a \triangleleft ; the terminal bands are composed mostly of interspaceal spots, while the basal bands are formed by annulations. The terminal series of reduced interspaceal spots, lying close to the external margin, is discontinued at the apex. Under surface reflecting the ornamentation of upper. What remains of the secondaries, show them to be whitish, sub-diaphanous, with a dark costal squarish patch, beyond the middle, more apparent on the under surface. Vertex, white, immaculate; white scales on the antennal scape in front; "collar," white, with two super-lateral brownish spots; "front," black. Thoracic disc, white, behind with blackish, sub-cyaneous scales: four median brownish annulations arranged in pairs; tegulæ, white, with a central annulation and a small dot, superiorly, on the inner margins. Legs, blackish, narrowly annulate with white. Exp., ♂, 1.80 inch.

Habitat.—Cuba (Gundlach).

Number $\frac{760}{729}$, *Gundlach and Poey's MS. Catalogue.*

Since *E. cyaneicornis*, may be readily distinguished from *E. albicornis*, *Grote*, of which latter species I, as also Dr. Herrich-Schaeffer, have examined several specimens, by its differently colored antennæ, as well as by other characters here given, I feel authorized to give this partial description of a species which I trust will be more fully worked

blackish brown; sometimes keeping the tawny tinge of primaries above and having the secondaries obscure, sooty brown on either surface. In these darker specimens the costa and anterior femora usually retain their reddish fulvous color, otherwise the insect is evenly saturated with obscure shades on the different parts. As long as the ground color of the wings allows it, the simple, darker, discal, diffuse spots, are always perceivable; this species is never banded. Nine specimens average 1.20 inch in expanse, and 0.45 inch in length of body, as near as may be.

If my views with regard to the variability of our United States species of *Crocota* are correct, we have not more than five well established species of the genus, which with three from Cuba makes eight in all, to say nothing of *C. læta*, *Walk.*, and *C. cupraria*, *Walk.*, the latter South American, and neither of which I have ever identified. I place *Cyturus*, *Grote*, as a subgenus of *Crocota*, *Hüb.*

up by the Lepidopterists of Cuba. It is smaller than, and evidently different from, our United States *E. scribonia*, *Hübner*, while it more nearly approaches our species than does *E. albicornis*.

EUHALISIDOTA, Grote.

Euhalisidota fasciata n. s. (Plate 5, fig. 7, ♂, 8, ♀.)

♂. Pale yellowish testaceous. Anterior wings, pale, yellowish testaceous, crossed by six bands defined by geminate, acutely dentate and slightly irregular and interrupted brown lines, which are also slightly powdery or atomical; the spaces between these lines is more yellowish and deeper colored than the ground of the wing. Base stained with brownish. In the first band, the geminate lines are widest apart, and apparently discontinued below the internal nervure. The second, is more irregular, and narrows below the median nervure, continued with the rest to internal margin. The third, crossing the discal cell and the middle of the wing, is most regular and evenly dentated. The fourth, is irregular, and the lines are more confused; it forms an inward curve at the extremity of the discal cell, running thence constrictedly, the lines approximate, to internal margin. The fifth, is again wider, more regularly serrate and even in its width. The sixth, rests on internal margin, and the lines are more interrupted, the outer being sub-obsolete. On the interspace above the first median nervule is a macular agglomeration of brown scales, which is of specific importance. The costal region is more yellowish than the rest of the wing included by the geminate lines. Beneath, the wing is dull testaceous, costal region stained with dull, pale brownish; basally, the markings are obsolete; but terminally, the geminate lines of the upper surface are reproduced, superiorly most distinctly.

Posterior wings, pale yellowish testaceous, with a faint, brownish tinge inferiorly along internal margin; this darker shade is, however, diffuse and indistinctly limited. A small, pale, brownish discal spot at the extremity of the discal cell, immediately beyond which is a sub-macular, interrupted, pale brownish median band, apparent centrally but discontinued towards internal margin below the fourth m. nervule. Under surface paler than upper; on the costa, within its middle, a brownish maculation. The median band of the upper surface is here much more distinct and characteristic. It is interspaceal and broken above the discal fold; the discal dot is plainly part of the second cluster of brown spots, which form the lower part of the median band; the latter is curved at the extremity of the discal cell so as to include it. Fringes short, concolorous with the wing on both pair. Head, large;

front stained with brownish. Antennæ, long, very strongly, heavily and evenly pectinate; the antennal stem, above, covered with pale testaceous scales; the pectinations pale, dull brownish. Collar, stained with brownish. Tegmæ, dull yellowish testaceous, immaculate. Abdomen, ochreous yellow above, stained with brownish laterally and towards anal segment, leaving this latter pale clay-color, or pale yellowish testaceous. Palpi, a little paler than front, with scattered brownish scales. Under thoracic parts clothed with mixed brown and yellowish hair. Legs, mostly pale clay-color; posterior tibia with a brown dot below the femoral joint. Exp., 1.75 inch. Length of body, 0.75 inch.

♀. Resembles the male; the general color is lighter. The geminate brown lines on the primaries are more interrupted and atomical, wider apart, and the space within them is more purely yellowish. The head, collar, base of the wings and abdomen, want the brownish discolorations of the male. The secondaries are immaculate, and want the median band, which is so characteristic in the opposite sex. On their under surface, however, there are two costal marks, indicating its obsolescence and a few dark scales, below the outer of these marks, on the discal cross-vein. Antennæ, whitish testaceous on their upper surface; beneath, shortly and evenly bi-pectinate. The thoracic squamation is mixed with a few blackish scale points. The eyes are covered with obscure reddish-purple hirsuties. Exp., 2.40 inches. Length of body, 0.85 inch.

Habitat.—Cuba (Gundlach.)

Number 664, *Gundlach's MS. Catalogue.*

A smaller species than *E. luxa*, *Grote*, which it much resembles. The marks on the secondaries, which are perhaps shared by other males of the genus, and the aggregation of brown scales on the outer geminate band of the primaries above first median nervule, are distinctive characters.

The discovery of the male *Euhalisidota*, adds much to the comprehension of the generic characters. The large head and plumose antennæ, which remind one of *Ammalo*, *Walker*, together with the Pattern of the Ornamentation, combine, in addition to the other characters I have elsewhere noted, to give a peculiar aspect to a very natural genus of Moths which may be purely Cuban, but will, perhaps, receive accessions from the other Islands of the Tropical Insular District. The squamation is thin and powdery, especially on the ♀ abdomen, whence it is very easily removed by attrition. The genus appears to

sustain a somewhat similar relation to *Halisidota*, *Hübner*, with that born by *Leucaretia*, *Packard*, to *Spilosoma*, *Stephens*. It is an outgrowth, so to speak, with fresh affinities.

I indicate the existence of another species of *Euhalisidota*, allied to *E. fasciata* and *E. scripta*, from a ♀ specimen sent me by Dr. Gundlach, under the Numbers $\frac{5}{2} \frac{5}{2} \frac{8}{0}$, and which differs from the former by the uniform testaceous clay-colored primaries and by the continuity of the geminate lines. From *E. scripta*, this species differs by the immaculate legs and the fainter markings of the primaries above. This specimen is similarly sized with *E. fasciata*, though perhaps a little stouter. I leave its description and elimination to the Cuban student.

Euhalisidota scripta, n. s. (Plate 5, fig. 9, ♀.)

♀. Size, moderate. Primaries, yellowish testaceous of a rather dull or obscure shade, covered by six very distinct bands defined by geminate brown lines, within which the spaces are filled in with darker scales than the ground color of the wing, and often brownish or but little paler than the lines themselves. The first of these bands, at base, is prominently dentate on median nervure. The interspace is dull yellowish. The second and third bands, before the middle of the wing, are approximate and fused five times, as near as may be, leaving the ground color of the wing to appear as paler spots between them. Their interspaces are clouded with brownish. The fourth band, with the fifth and sixth, is more oblique and is narrow, confused, somewhat irregular and constricted, most strongly filled in with brown, so as to render the marginal geminate lines indistinct. On internal margin the inner of the marginal lines joins the outer marginal line of the third band, so that the space between the third and fourth bands, where the paler ground color of the wing obtains, is broadest at costa, and tapers dentatedly to internal margin. The fifth and sixth bands are distinctly margined, broad (the marginal lines being wider apart), and but little darker than the ground color of the wing. Under surface pale testaceous; the markings of the upper surface are here faintly reproduced. Secondaries, testaceous; towards the base and along internal margin, the scales become denser and longer and are of an obscure, pale brownish testaceous hue. Under surface paler, with brown, costal marks. Palpi, rather small, yellowish testaceous, with linearly arranged brownish scales on their outer surface. Maxillæ, as usual, moderate, opaque brownish. Head, yellowish testaceous; between the antennal insertions, stained with brownish. Collar with

two supra-lateral brownish annuli, and fringed with brown scales. Abdomen, above, dull brownish ochraceous; this darker color very neatly defined, and contrasted with the whitish, clay-colored squamation of the under and lateral abdominal surfaces. Legs, testaceous clay-colored, interruptedly maculate and annulate with brown; fore femora distinctly ochreous on the inside. Exp., 1.80 inch. Length of body, 0.70 inch.

Habitat.—Cuba, (Gundlach.)

Number $\frac{759}{827}$, *Poc'y's and Gundlach's MS. Catalogues.*

The smallest species of the genus yet discovered. The banded legs and distinct markings of the primaries are sufficiently characteristic. The upper surface of secondaries and abdomen are slightly more obscurely colored than usual.

Euhalisidota alternata, n. s. (Plate 5, fig. 10, ♀.)

♀. Size, large. Primaries, white, with bright brown bands. These are, as usual, six in number, but want the usual geminate, marginal, narrow, darker lines. The basal band is strongly dentate superiorly, the outer projection fusing with the second band, interrupted with white inferiorly and obsolete below internal nervure. The second band is broad, outwardly projected on the discal cell, and below the median nervure is inwardly arcuate to internal margin, where it is fused with the third band. Below the median nervure it is slightly interrupted with white scales. The third band is approximate to the second, and consists of two broad, bright brown, marginal scalloped bands or lines; the space between these is white, except on costa and internal margin, where it is filled in with concolorous bright brown. The appearance of this band is suggestive of the fact, that the bands are in reality similarly composed with those in the other species, but that the marginal lines are broader, and the bands being generally filled in with concolorous scales, are hence more homogenous in appearance. The fourth band is irregularly margined, entirely filled in with bright brown scales, and, with the fifth and sixth, more oblique and even than the basal bands. The fifth, is narrower, with a few central pale scales, and interrupted obsoletely above first median nervule. The sixth, is produced inwardly on the nervules, broadest at apex and tapering to internal angle, before which it becomes obsolete. Terminally the white color narrowly prevails on the interspaces. Fringes, white, interrupted with brown at apex and interspaceally, except between fourth median nervule and internal angle. Under surface, whitish; the markings of the upper surface are here faintly reproduced.

Posterior wings, whitish testaceous, thinly clothed with scales, which, however, become longer inferiorly and at base, where they are slightly tinged with yellowish. Under surface, whitish, with two costal brown macular discolorations, of which the one nearest the base of the wing is much the larger. Head, whitish; clypeus narrower than usual; brown between the antennæ at base. "Collar," white, with two diffuse brown annulate marks. Patagia and thorax, whitish, with brown diffuse markings.

Antennæ, long, whitish clay-color above; beneath very shortly and finely pectinate. Abdomen, stout, ochreous above, whitish laterally and beneath with diffuse central and lateral brownish markings. Legs, whitish clay-color, interruptedly maculate with brownish. Anterior coxæ, femora and tibiæ, ochreous on the inside, as are also very narrowly the middle and hind femora. Exp., 2.10 inches. Length of body, 0.85 inch.

Habitat.—Cuba, (Gundlach.)

Number 743, *Gundlach's MS. Catalogue.*

A very fine and distinct species, differing from the other species of this genus, in the slightly smaller head and finely pectinate antennæ. There is great uniformity in the coloration of the abdomen and legs in the species of *Euhalisidota*, and *E. alternata*, hardly differs from the rest of the genus in this respect. The palpi have been broken off in my specimen, which is otherwise in fine preservation. The abdomen is very stout with the same mealy squammation, and the species seems strictly congeneric with *E. luxa*, and the others that I have described under the genus *Euhalisidota*, *Grote*.

NELPHE, Boisid.

Nelphe confinis.

Charidea (Nelphe) confinis, H.-S., *Lep. Exot.*, pp. 74 & 81, fig. 277.

Dr. Gundlach sends me an old and faded ♀ specimen which, while evidently belonging to this genus, I conclude belongs to the species figured by Dr. Herrich-Schaeffer as above cited. The black colors of the wings have become of a faded brown by etiolation. The genus falls in between *Halisidota* and *Erithales*, and is perhaps the last of a number of genera which prepare us for *Erithales*, from which latter genus *Nelphe* seems to take the peculiar abdominal style of ornamentation.

Habitat.—Cuba, (Gundlach.)

Number $\frac{428}{67}$, *Gundlach and Poey's MSS. Catalogue.*

ERITHALES, Poey.

Erithales proxima, n. s.

♂. Anterior wings rather pale ashen, evenly and closely grained with darker scales; a distinct black discal dot; faint traces of two extra discal transverse lines, formed by an aggregation of the darker scales; the inner of these lines appears to be angulated opposite the disc and slightly waved; a terminal series of black points. Posterior wings darker than anterior, brownish cinereous, immaculate. Under surface of both wings darker than secondaries above, without markings, evenly colored, the primaries the darker. Head and thorax, above, nearly concolorous with anterior wings. Antennæ plumose. Beneath, the thorax and legs are dull, pale brownish, like the under surface of the wings; legs a little the darker. Abdomen, above, yellow, at base covered with longer, pale brownish scales; beneath, the venter is dark brown, margined, laterally, by obscure whitish shade stripes, succeeded by pale brownish stigmatal vittæ. Exp., 1.30 inch. Length of body, 0.50 inch.

Habitat.—Cuba, (Gundlach.)

Number 649, *Gundlach's MS. Catalogue.*

Somewhat larger than *E. guacolda*, *Poey*, and apparently differing specifically by the characters of the paler primaries, which are destitute of the numerous black maculations characterizing Prof. Poey's species, as well as by the obsolescence of the abdominal dorsal dots. This genus is allied to *Euchætes*, *Harris*.

EUPROCTIS, Hübner.

Euproctis pygmæa, n. s. (Plate 5, fig. 11, ♂.)

♂. Size, small. White. Primaries pure white above, with a broad, distinct, zig-zag, perpendicular streak of bright ferruginous scales, resting on the internal margin within the angle. On the median nervules, superiorly, slight aggregations of similarly colored scales. Fringes, rather long, white. Beneath, whitish, with a cinereous or smoky tinge, which deepens into blackish along the costa.

Secondaries, above and beneath, whitish, with a faint, smoky tinge; fringes long, white. Antennæ, rather short, pectinate, curved in the specimen so that the tips approach each other; the pectinations are blackish; at base, the antennal stem, above, is covered with white scales. Head, comparatively large, clypeus wide, smoothly scaled as are the small palpi—all white. Abdomen concolorous with secondaries above and beneath; shorter than internal margin of secondaries. Legs, white, mostly finely scaled; tibiæ, and tarsi at base, heavily fringed

with long, white hair; anterior legs narrowly blackish inwardly. Exp., ♂, 0.60 inch. Length of body, 0.20 inch.

Habitat.—Cuba, (Gundlach.) Coll. Ent. Soc. Phil.

Number 750, *Gundlach's MS. Catalogue.*

Euproctis fumosa, n. s.

♀. Size, moderate; wings rounded. Anterior wings white, slightly silky; a broad, diffuse, oblique, pale, smoky brown band occupies the wings subterminally, leaving a narrow, white terminal space, and is intersected indistinctly by the white scales clothing the median nervules, its outer margin following the shape of the wing, roundedly projected inwardly below costa, which latter it does not attain. The rather long fringes are pale, smoky brown. Posterior wings quite pale, smoky brown, becoming whitish at the base; fringes a little paler than on primaries. Under surface of primaries, largely pale smoky brown, whitish at base; a very narrow, terminal whitish line. Secondaries entirely whitish; fringes dark, as on upper surface, on both pair. Antennæ, short, simple, white above. Head and thorax, white, "collar," a little stained. Abdomen whitish. Legs, whitish, pale brownish inwardly, as are the tarsi; tibiæ clothed with longer lateral white hair. Exp., 0.90 inch. Length of body, 0.35 inch.

Habitat.—Cuba, (Gundlach.)

Number 654, *Gundlach's MS. Catalogue.*

EDEMA, Walker.

Edema insularis, n. s.

♀. Dull brownish. Palpi prominent, obliquely ascending, porrect, third article elongate. The superior caputal scales and the "collar" are paler than the thorax and patagia, which, with abdomen and legs, are dull brownish, but little paler than the wings. Inwardly, the legs are clothed with darker scales; tarsi, narrowly subannulate with whitish.

The primaries, in ornamentation, recall our United States *E. albifrons*, *Walk.*; the external margin seems shorter and hardly so oblique, while the general color is obscure brownish, not cinereous, and the markings differ in detail. There is a basal geminate dentate half-line. Beyond, a geminate, dentate, distinct, transverse anterior line, which is outwardly arcuate superiorly. All the transverse lines are of a darker brown than the ground color of the wing, which shows scattered, darker scales on the "veins." Median space, narrow; superiorly darker shaded than on internal margin; a discal linear discoloration, below which a dark, shaded spot. Outwardly, the median space is de-

lined by a darker shade line, which is very prominently projected below costa, and is succeeded by a transverse double row of blackish dots with white accessory scales. A narrow, short, oblique whitish apical shade, which is far less prominent and continued than in *E. albifrons*. Beneath this, a diffuse, terminal dark shade. The terminal line is interrupted on the nervules, and is straight, not regularly lunulate as in *E. albifrons*. Fringes darker, with a terminal, pale shade, and interrupted with paler stains at the extremity of the nervules. Secondaries, unicolorous brownish, immaculate, a little paler at base; fringes, whitish.

Under surface, brownish, immaculate, becoming a little paler on the secondaries and at base of primaries; the apices of these latter tinged with whitish. Exp., ♀, 1.70 inch. Length of body, 0.80 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 233, Poey's MS. Catalogue.

This more robust species differs from *E. albifrons*, in the longer palpi; while I have detailed above, in the body of the description, the characters of ornamentation which separate it from its Northern congener.

The remarks of Dr. Herrich-Schaeffer, *Corr. Bl. Reg. No. 9*, p. 134, Sept. 1866, called my attention to the Noctuidæ contained in Prof. Poey's Collection. Among them I found the specimen which I have above described under the Notodontid genus *Edema*, *Walk.* I had already examined a species of *Crino*, *Hübner*, (No. 231) and *Nystalea*, *Guenée*, (No. 307,) both of which latter I am still disposed to regard as Noctuidæ and *not* Bombycidæ. I have not been able to find any specimen with the etiquette "473," a No. mentioned by Dr. Herrich-Schaeffer as attached to a specimen belonging to a Notodontid genus, and sent by Dr. Gundlach. *Euthisanotia timais*, *Hübner*, and *Euglyphia hieroglyphica*, *Walk.*, (*Bombyx festiva*, *Fabr.*; *Euglyphia elegans*, *Hübner*;) the latter primarily illustrated by Cramer, and described by Guenée under the name of *Noropsis fustuosa*, are represented in Prof. Poey's Collection by specimens from Cuba; both of these species have already been properly referred to the Noctuidæ by various Authors. I mention this circumstance here in connection with a letter received from Prof. Poey on the subject, and also since these species are enumerated among the "Bombycites" of the Collection in the MS. Catalogue of the Professor.

In the pages of the "Repertorio fisico-natural de la isla de Cuba," will be found notices by Prof. Poey of certain of my Papers. In the

first of these notices, contained in the Number for December, 1865, exceptions were taken to certain of my remarks, and additions were made to my synonymical citations to a number of species of North American Sphingidæ. Subsequently, however, what was objectionable to me in this notice, because it was also erroneous, was in great part withdrawn, and I have no desire to go again over the various points discussed, referring the student to my subsequent Papers, written with Mr. Robinson, on the Synonymy of the North American Sphingidæ.

With reference to the expressions of friendly feeling and respect towards myself, which have been elicited from Prof. Poey in the pages of the *Repertorio*, I thank him kindly for his consideration, and take them rather as indices that the Cuban scientists are now looking to the United States for assistance in the development of the knowledge of their Entomological fauna, than that they are deserved by my brief Papers on Cuban Moths. These tributes of appreciation are, however, more fully earned by my brother Entomologist, Mr. Ezra T. Cresson, whose work on the Cuban Hymenoptera, deservedly calls for expressions of approval.

The Lepidoptera present, perhaps, greater difficulties to the student than the other Sub-Orders of Insecta, owing to their peculiar structure; so that opportunities have been offered for the erection of numerous classificatory arrangements, which, in proportion as they are arbitrary, idiosyncratic and artificial, will be found to be less just, and to contain the seeds of their rejection at the hands of science. The genera are to a great degree comparative. Clustered round some central point of structural peculiarity, which is often overlooked in a generic diagnosis, lie a mass of comparative differences, which altogether combine to give a generic aspect easily felt, but at times difficult to define with precision. Since science is progressive, and to advance it we need new facts, we must conscientiously lay hold of all structural characters, unhindered by a fear that subsequent discoveries may possibly prove the untenability of our conclusions, and lead to the rejection of our new generic determinations.* If our genera are fairly

* I would refer here to Hübner's remarks in the introductory Preface to the third Volume of the "*Zutræge*," pp. 3—4. These take the form of an apology for the number of new generic names introduced by him, but the justness of his generic determinations is very evident in the great majority of instances. Whatever of corroborative value is conveyed to a genus by the discovery of fresh species, has been added, in my present Papers on Cuban Zygænidæ, to the genera *Horama*, *Apistosis*, etc. The introductory remarks of Hübner to the first Volumes of the "*Zutræge*," are full of modest genius and de-

founded under the circumstances, it is all we have to provide for. To be just, posterity will judge us by our own times, and not by the new light that will be then shining on the different departments of Zoölogy.

I here insert a few general remarks on the homogeneity of the Zygæninæ, and I may be the more readily excused for so doing, in that the group is first illustrated in my present papers on Cuban Moths, by an endeavor to practically arrange a portion of our numerous inter-tropical American genera.

In rising to higher considerations as to the internal arrangement of the genera of Zygæninæ, we endeavor to select those which are most extreme in the concentration or in the diffusion of their physical parts. Taking the European genus *Zygæna*, as the comprehensive type from which the genera recede above and below, we seem to terminate above in *Horama*, and below in *Diopsis*. Between these two lie the mass of generic forms, which we can arrange the more readily when we have appreciated the extremes. In selecting *Horama*, to lead the sub-family, we look for the greatest concentration of parts, and the least waste of material. Here the wings are strong and narrow, recalling the higher *Ægeriidæ* and *Sphingidæ*. The stout legs, impectinate and thick antennæ, well developed head and thorax, the linear yet full

votion to his science. These deserve to be carefully read by the student, while they are worthy of the attention of the cosmical Zoölogist, or the more æsthetic historian of the progress of the Natural Sciences. I know, indeed, that the publisher of the work has stated, that he has occasionally altered the phraseology ("Eigenthümlichen Sprache") of Hübner, but I am of opinion that the direct sense of Hübner's remarks is in every instance original, and bears the evidences of the study and time which, from his extended works, he must have devoted to his subject. We see, indeed, in the descriptive part of the *Zutræge*, which we may reasonably suppose, from his unacquaintance with the subject, the publisher would leave untouched, sentences which are very roughly composed, and even ungrammatically written, but which, by their sincerity and a certain quaintness of expression, should disarm the critic. (Compare, on this point, *Ochsenheimer, Die Schmetterlinge von Europa, Einl.*, pp. 13—14. I do not agree, however, with the conclusions expressed in the following sentence, commencing: "Sein Sucht, ohne Noth neue Namen einzuführen," etc.) Hübner may be considered as *Boisduval*, according to Prof. Poey, says: "el mejor de los iconografos,"—but not, in my opinion, as ungraciously added, by way of antithesis, "el peor de los sistematizadores." Rather has he limned with prophetic pencil, a sketch of the Sub-Order, to be filled out and perfected by succeeding scientists, and, considering the times in which he wrote and the generic conceptions of the period, his task was that of a great discoverer, of whom we may speak with reverence, even if we cannot metaphorically apply to him the words of Tasso, who writes of one more widely known:

— avrá ardimento

All'incognito corso esporsi in prima."

abdomen, and the firm, dark, hymenopteriform tegument or body crust, together with the high development of the basal abdominal lateral valves,—are characters that, by comparison, stand out in prominent relief. This genus, with *Callicarus*, *Grote*, overlaps and stands higher in certain characters than the lower genera of the Castniæ, such, for instance, as *Euscirrhopterus*, *Grote*, *Eudryas*, *Boisd.*, and *Ciris*, *Grote*; this latter with its pectinated antennæ, seems the lowest in rank of its sub-family. Lower down, and leaving *Horama* and its ally, the wings become vitreous in *Burtia*, *Grote*, *Eunomia*, *Hüb.* and *Cosmosoma*, *Hüb.*; the antennæ affect Bombycid forms, the colors brighten, the legs weaken, the abdominal conformation is less concise. Here the genera clustering round *Zygaena*, form a brilliant yellow, scarlet, black and scintillate group, commencing with *Isanthrene*, *Hüb.*, and obtaining its fullest development in *Histicæa*, *Walk.* Below come *Echeta*, *H-S.*, *Scopsis*, *Walk.*, *Uranophora*, *Hüb.*, and *Ctenucha*, *Kirby*; these two last are unspotted Pericopids. Here the analogies with Lithosiinæ (in reality a small group of lead and rose-colored, plain or striped, rarely white or spotted Bombycidæ) interfere strangely with the appearance of the moths, without affecting the affinities of these still metallic hued genera. *Ctenuchidia*, *Grote*, follows, and in *Composita*, *Hüb.*, is heralded a succession of broad-winged Pericopid genera from Asia, Africa, and America, which leaves us finally the lax and mealy-scaled *Melanchroia*, *Hüb.* and *Dioptis*, *Hüb.*, genera overlaid with Bombycid affinities, their parts thin and vague, and with a lack of concentration which is indicative of lowness of type. The family bronze and metallic coloration forsakes them,—Lucas erroneously refers *Dioptis rica*, *Hübner*, to the Bombycid genus *Callimorpha*, *Latreille*.

It may be justly remarked, that the "*Syntomina*" of Dr. Herrich-Schaeffer, including the "*Arctioidea syntomidiformia*," are not natural or homogeneous groups, but consist of either Zygaenid genera with Bombycid analogies or vice versa, and that the true affinities of these genera are not recognized in thus associating them under common family appellations.

In considering the characters of the Family Zygaenidæ, which in the view here presented, includes the Castniæ and the numerous genera which, combined under different designations, precede the Bombycidæ in the British Museum Lists, I am undecided whether the Uraniidæ of Authors do not, in fact, belong here, and whether we are justified in rejecting these, as has been usually done to the Phalænidæ

(Geometridæ) or to the immediate vicinity of this latter family. The coloration of *Urania* and *Cydimon*, is *Zygaenid*; since the species are black with metallic red and green ornamentation.

It may be hazarding too much to refer, from the mere acquaintance with a figure, any genus to a decided position, but I am impressed with the idea that the genus *Epicopeia*, *Westwood*, (*Arcaena Entomologica*, Plate 5,) belongs to the *Zygaeninae*, as here considered, and that this highly interesting form reproduces in a lower group the tendency of the secondaries in *Lepidoptera* to become "caudate," or "bizarre" in their shape. While mimicking *Papilio*, as has been interestingly elucidated by *Westwood*, the weak corporal parts are characteristic of those *Zygaenid* genera which become laden with *Bombycid* analogies..

The *Zygaenid* sub-families, *Castniaræ*, *Boisd*, and *Zygaeninae*, *Pack.*, are susceptible of tribal division, which is required by the physical structure of the moths, and will at the same time assist the comprehension of the genera. In the *Castniaræ*, the genera clustering around *Castnia*, *Fabr.*, of which the lowest North American genus is *Alypia*, *Hübner*, may be taken as composing the more typical tribe of the sub-family; a second tribe will contain *Eudryas*, *Boisd.*, and allies. In the *Zygaeninae*, several tribes remain to be elucidated, for which my remarks may be of service to the classifier, but it will need an extended acquaintance with the numerous genera of this sub-family to indicate them with precision. In erecting groups higher than genera, the neurational characters should not be solely relied on; when we consider that the neuration is of comparatively no value whatever in the lower Sub-Orders of *Insecta*, partially owing to the elytriform character of the wings, we see at once, that the body characters are of higher value for the purposes of a natural classification, and that the details of the structure of the out-growths of the articulate animal are of a minor importance.

To resume, the *Zygaeninae* become a strong feature in the *Lepidopterological* faunas of the Tropics, displacing, as I have elsewhere remarked, the *Bombycidae* to a great extent; the proportionate expression of this latter family in the temperate zones, becoming here reduced. In Europe, the *Zygaeninae* are represented principally by the genus *Zygena*, numerous in species and strongly characterized and comprehensive in its physical and typical characters. Thus European *Lepidopterists* often fail to understand the relation and position of the varied *Zygaenid* forms from intertropical Asia, Africa, and our own Continents, and are unwilling to recognize the numerous genera, with



- | | |
|---|---|
| 1. <i>Burtia rubella</i> , Grote. ♂. | 6. <i>Hippola minima</i> , Grote. ♂. |
| 2. <i>Hiorama difflissa</i> , Grote. ♂. | 7. <i>Euhalisidota fasciata</i> , Grote. ♂. |
| 3. <i>Callicarus pennipes</i> , Grote. ♂. | 8. <i>Euhalisidota fasciata</i> , Grote. ♀. |
| 4. <i>Formiculus pygmæus</i> , Grote. ♀. | 9. <i>Euhalisidota scripta</i> , Grote. ♀. |
| 5. <i>Eunomia insularis</i> , Grote. ♀. | 10. <i>Euhalisidota alternata</i> , Grote. ♀. |
| 11. <i>Euproctis pygmæa</i> , Grote. ♂. | |

often few species, as of a family affinity with their strongly characterized genus. In the purely American lepidopterological faunal districts of our Northern Continent, north of the Gulf of Mexico, representatives of the genus *Zygæna*, are probably wanting, and we have but few forms, in the minority of cases with European analogues, such as *Acolothus*,* *Clemens*; *Scopsis*, *Walk.*; *Ctenucha*, *Kirby*; *Callalucia*, *Grote*; *Pyromorpha*, *H-S.*, and *Lycomorpha*, *Harris*, though these are prophetic of the Southern development of the Sub-family, or, viewing the *Zygæuinæ* from their metropolis, these genera are the scanty feelers which are stretched towards our boreal regions. These contrast strongly with the prevalent *Bombycidæ* by which they are surrounded. Compared with the stouter *Sphingidæ* and *Noctuidæ*, the *Zygæuinæ* and *Bombycidæ* are weaker in structure, and in effect seem more subject to climatal influence. In intertropical America, the most numerous representation of the *Bombycidæ* seems to be afforded by those *Arctiidæ*, which, in their analogies, copy the *Zygæuinæ*. The weight of a prevailing Zoölogical structural form is thus best measured by its influence on its surroundings.

I give here a list of all the species of *Sphingidæ*, *Ægeriidæ*, *Bombycidæ* and *Zygænidæ*, which I am led to believe have been authentically determined as Cuban. I have elsewhere recorded Prof. Poey's opinion as to the species noticed by Lucas in the work of D. R. de la Sagra, and have only to add since examining the book, that it bears internal evidence of its unreliability as to the habitat of very many of the insects therein contained. Where these have not been mentioned by other Authorities as found in Cuba, I have accordingly very naturally disregarded them; while, in any case, the descriptions of many of the moths would prevent the recognition of the species.

I have used the following marks in this list: † after a species indicates that, while acquainted with the species, I do not know it from

* From the circumstance that Dr. Clemens separated *Procris americana*, generically from his *Acolothus falsarius*, the latter was not recognised by Dr. Packard, who described the species subsequently as *Harrisina Sanborni*. This species being generically identical with *Procris americana*, Dr. Packard's genus becomes synonymous with *Acolothus*, *Clemens*, while the latter appellation must be retained, following the law of priority. Our species will then be as follows:

ACOLOITHUS, Clemens.

1. *Acolothus falsarius*, *Clemens*! (*Harrisina Sanborni*, *Pack.*)
2. *Acolothus americanus*! (*Procris amer.*, *Boisd.*; *Procris dispar*, *Harris Cat.*; *Ctenucha amer.*, *Walk.*; *Harrisina amer.*, *Packard.*; *Aglaope amer.*, *Clemens.*)

Cuba; — after a species, indicates that it is unknown to me; || signifies that the name has been previously employed; ‡ denotes erroneous determinations; Greek letters are employed to distinguish forms which are considered as races of the preceding species. Where no authority is appended to a specific name, it is believed to be used in its present connection for the first time in the present list. I am indebted to the able "List of Coleoptera of North America," by Dr. John L. Le Conte, for most of the above-mentioned marks and the wording of their significations.

 SPHINGIDÆ.

MACROGLOSSINI.

HÆMORRHAGIA, G. & R.**thysbe**, G. & R. ‡*Sesia thysbe*, Fabr.*Sphinx pelagus*, Cram.*Sesia cimbiciformis*, Steph.**ÆLLOPOS**, Hübn.**tantalus**, Hübn.*Sphinx tant.*, Linn.*Sphinx zonata*, Drury.**titan**, Hübn.*Sphinx tit.*, Cram.*Macrogl. balteatum*, Kirtl.*Macrogl. annulosum*, Swain.**EUPYRRHGLOSSUM**, Grote.**sagra**, Grote.*Macroglossum sag.*, Poey.**ENYO**, Hübn.**lugubris**, Walker.*Sphinx lugub.*, Linn.*Sphinx fœcusc.*, Cram.**camertus**, Hübn.*Sphinx Cam.*, Cramer.**danum**, Hübn.*Sphinx dan.*, Cramer.**HEMEROPLANES**, Hübn.**pseudothyreus**, Grote.**PERIGONIA**, Boisd.**lusca**, Walker.*Sphinx lusca*, Fabr.**lefebvreii**, Grote.*Macroglossa lefeb.*, Lucas.**divisa**, H-S.**CALLIOMMA**, Boisd.**lycastus**, Walk.*Sphinx licast.*, Cramer.*Sphinx galianna*, Burm.

CHÆROCAMPINI.

PERGESA, Walk.**thorates**, Walk.*Oreus thor.*, Hübn.**CHÆROCAMPA**, Duponch.**gundlachii**, H-S.**irrorata**, Grote.**porcus**, H-S.*Oreus porc.*, Hübn.**nechus**, Lucas.*Sphinx nechus*, Cram.*Chær. chiron* ‡, Walk.**robinsonii**, Grote.*Chæroc. falco* ‡, H-S.**tersa**, Harris.*Sphinx tersa*, Linn.**DEILEPHILA**, Ochs.**calverleyi**, Grote.**lineata**, Harris.*Sphinx lin.*, Fabr. (Syst. Ent.)**PHILAMPELUS**, Harris.**vitis**, Harris.*Sphinx vitis*, Linn.

(id. Drury: Fabr.; W. V.; Cramer. 267, C.; Smith.)

Dupo jussicucæ, Hübn.*Sphinx fasciatus*, Sulz.*Philamp. juss.*, Walk.*Philamp. fasc.*, Lucas.**linnei**, G. & R.*Sphinx vitis* ‡, Cram. (268 E.)*Dupo vitis* ‡, Hübn.*Philamp. vitis* ‡, Walk.*Philamp. fasc.* ‡, Grote.

lycaon, Grote.*Sphinx lycaon*, Cram.*Pholus lycaon*, Hübn.*Philamp. satellitia*†, H-S.**labruscæ**, Walk.*Sphinx labr.*, Linn.**PACHYLIA**, Boisd.**ficus**, Walk.*Sphinx fic.*, Linn.*Chæroc. Cramcri*, Ménét.**inornata**, Clemens.*Sphinx ficus*†, Cram. 394 D.*Chæroc. ficus*†, Ménét.**resumens**, Walk.**AMBULYX**, Boisd.**strigilis**, Walk.*Sphinx strig.*, Linn.**gannascus**, Walk.*Sphinx gann.*, Stoll.**SPHINGINI.****DILUDIA**, G. & R.**brontes**, G. & R.*Sphinx bront.*, Drury.

(H-S., Grote, non Boisd.)

PSEUDOSPHEX, Burm.**tetrio**, Burm.*Sphinx tet.*, Linn.*Sphinx hasdrubal*, Cram.**AMPHONYX**, Poey.**antæus**, Poey.*Sphinx ant.*, Drury.*Sph. jatropha*, Fabr.*Sph. medor*, Cram.**duponchel**, Poey.**cluentius**, Poey. —*Sphinx cluent.*, Cram.**MACROSILA**, Boisd. (Emend.)**rustica**, Walk.*Sphinx rustica*, Fabr.*Sph. chionanthi*, Smith.**carolina**, Clemens.*Sphinx carol.*, Linn.**afflicta**, Walk.*Sphinx affl.*, Grote.*Syzygia affl.*, G. & R.**cingulata**, Clemens.*Sphinx convolvuli*†, Drury.*Sphinx cing.*, Fabr.*Sph. convolvuli*†, Smith.*Sph. Druræi*, Donovan.**HYLOICUS**, Hübn.**pocyi**, Grote.*Erinnyis pocyi*, Gundl.**DILOPHONOTA**, Burm.**rimosa**, G. & R.*Erinnyis rim.*, Grote.**congratulus**, Gundlach.**caicus**, Burm.*Sphinx caic.*, Cram.**ello**, Burm.*Sphinx ello*, Linn.**alope**, Burm.*Sphinx al.*, Drury.**merianæ**, G. & R.*Erinnyis mer.*, Grote.**œnotrus**, Burm.*Sphinx œnot.*, Cram.**melancholica**, G. & R.*Erinnyis mel.*, Grote.**cinerosa**, G. & R.*Erinnyis cin.*, Grote.**pallida**, G. & R.*Erinnyis pall.*, Grote.**guttularis**, G. & R.*Anceryx gutt.*, Walk.**CAUTETHIA**, Grote.**noctuiiformis**, Grote.*Ænosanda*|| *noct.*, Walk.**ÆGERIIDÆ.****ÆGERIA**, Fabr.**cubana**.*Scsia cub.*, H-S.**ZYGÆNIDÆ.****CASTNIARES.****CASTNIINI.****SEIROCASTNIA**, Grote.**tribuna**, Grote.*Ephialtias trib.*, Hübn.**EUDRYINI.****EUSCIRRHOPTERUS**, Grote.**pocyi**, Grote.*Heterandra disparilis*, H-S.

ZYGÆNINÆ.

- HORAMA**, Hübn.
diffisa, Grote.
Hor. pretellus, H-S.
- CALLICARUS**, Grote.
pennipes, Grote.
Hor. plumosa, H-S.
- FORMICULUS**, Grote.
pygmæus, Grote.
- SETIODES**, H-S.
nana, H-S.—
 (an spec. præc.?)
- BURTIA**, Grote.
rubella, Grote.
Gundlachia||crucata, H-S.
- EUNOMIA**, Hübn.
insularis, Grote.
Glaucopis elegantula, H-S.
- nitidula*.—
Glaucopis nitid., H-S.
- COSMOSOMA**, Hübn.
omphale, Hübn.
selecta.
Glaucopis scl., H-S.*
- ISANTHRENE**, Hübn.
chalciopæ, Hübn.
- HIPPOLA**, Walk.
 "syntomoides," Walk.
Glaucopis synt., Boisd.
- minima*, Grote.
- TRICHÆA**, H-S.
pilicornis, H-S.—
seticornis, H-S.—
- EMPYREUMA**, Hübn.
pugione, Hübn.
- ECHETA**, H-S.
albipennis, H-S.
subochrea, Grote.
Correbia suboch., H-S.

CALONOTOS, Hübner.

- thetis*, Hübn.
Sphinx thetis, Linn.
Sphinx leucus, Cram.
- ACLYTIA**, Hübner.
heber, Hübn.
 ♂ *Sphinx heber*, Cram.
 ♀ *Sphinx halys*, Cram.
- APISTOSIA**, Hübn.
humeralis, Grote.
Apist. judas†, H-S.
- URANOPHORA**, Hübn.
chalybea, Hübn.
Apistosis? terminalis, Walk.
- CTENUCHIDIA**, Grote.
virgo, Grote.
Ctenucha virgo, H-S.
- COMPOSIA**, Hübn.
fidelissima, H-S.
- SPHÆROMACHIA**, Grote.
cubana, Grote.
Pericopis cub., H-S.
- MELANCHROIA**, Hübner.
fumosa, Grote.
Mel. cephise†, Hübn. Sm.
geometroides, Walker.
Glaucopis mors, Lucas.
- AGYRTA**, Hübner.
auxo, Hübn. —
Sphinx auxo, Linn.
- DIOPTIS**, Hübner.
vinosa, Walker.
Sphinx vinosa, Drury.
- DESIDERATA****
Glaucopis cœmia, H-S.
Charidea bicolor, H-S.
Charidea cimicoides, H-S.

* Walker gives "Eurate selecta, Boisd.," as the original name of this species, which I here temporarily consider as forming, with other species, a group in Hübner's genus *Cosmosoma*. A synonymical list of the species figured in "H-S. Dep. Exot. Nov. a. m. Cog." would be a valuable addition to that beautifully illustrated work.

** Species that I am autoptically unacquainted with, and which are briefly described under generic names that are used in too wide a sense to allow me to judge of the classificatory position of the insects.

BOMBYCIDÆ.

- LITHOSIINÆ.
TORYCUS, H-S.
 tricolor, H-S.—
MIEZA, Walker.
 † albatula, H-S.—
 (an Clemensia, Pack.?)
CROCOTA, Hübner.
 heros, Grote.
 disparilis, Grote.
 pallicornis, Grote.
 CYTORUS, Grote.
 lata.
Cytorus latus, Grote.
UTETHEISA, Hübner.
 bella, Hübn.
Tinea bella, Linn.
 a. ORNATRIX, Hübn.
Noctua ornatrix, Linn.
 β. SPECIOSA, Grote.
Deiopeia spec., Walk.
CYDOSIA, Westw.
 nobilitella, Westw.
Tinea nob., Cram.
 ARCTIIDÆ.
SPILOSOMA, Stephens.
 jussizæ, Walk.
Arctia juss., Poey.
ECPANANTHERIA, Hübner.
 albicornis, Grote.
 cyaneicornis, Grote.
EUPSEUDOSOMA, Grote.
 niveum, Grote.
 ? *Charidea? nivea*, H-S.
ROBINSONIA, Grote.
 formula, Grote.
CARATHIS, Grote.
 gortynoides, Grote.
AMMALO, Walk.
 impunctus, Grote.
EUHALISIDOTA, Grote.
 luxa, Grote.
- fasciata, Grote.
 scripta, Grote.
 alternata, Grote.
HALISIDOTA, Hübn.
 cinctipes, Grote.
Hal. tessellaris † Walk.
 cubensis, Grote.
NELPHE, Boisd.
 confinis, H-S.
ERITHALES, Poey.
 guacolda, Poey.
PAREUCHÆTES, Grote.
 cadaverosa, Grote.
 affinis, Grote.
 DASYCHIRÆ.
EUPROCTIS, Hübn.
 argentiflua, Hübn.
 pygmæa, Grote.
 fumosa, Grote.
PHRYNE, Grote.
 immaculata, Grote.
 PSYCHIDÆ.
THYRIDOPTERYX, Steph.
 thoracica. (See note.)
Hymenopsyche thor., Grote.
OIKETICUS, Guilding.
 poeyi, Lucas.
PSYCHONOCTUA, Grote.
 personalis, Grote.
PEROPHORA, Harris.
 packardii, Grote.
 PTILODONTES.
EDEMA, Walk.
 insularis, Grote.
HETEROCAMPA, Doubleday.
 cubana, Grote.
- HEPIALINÆ.
 COSSINI.
XYLEUTES.
 piger, Grote.

NOTE.—Since the presentation of this Paper, I have seen an article by Dr. Clemens, in which *Electus coniferarum*, Harris, (Down. Hort. 8, 1853.) is referred as a synonym to *Thyridopteryx ephemeraformis*, Stephens. In this view of the case the genus *Hymenopsyche*, becomes synonymous with *Thyridopteryx*, and the species from Cuba will be called *Thyridopteryx thoracica* (*Hymenopsyche thoracicum*, Grote). Since, under the circumstances, my course in erecting the new genus was justifiable, and seems to be so regarded by Dr. Clemens, I

have little to add to the matter, except that I was then and am yet unacquainted with the species included under the *Thyridopteryx* by Dr. Packard in the "Synopsis." By actual comparison, through the kindness of Dr. Packard, I ascertained at the time the identity of *Æceticus coniferarum*, Harris, with a species occurring plentifully in New York. On a comparison of this species with the true *Æceticus* (*Oiketicus*, *Guiding*.) from Cuba, I found the two forms to be generically distinct, so that, in noticing a new species congeneric with *O. coniferarum*, I very naturally erected a genus to contain the two species. Dr. Clemens, without examining specimens of *H. thoracicum* from Cuba, doubts the validity of the species, but, having examined and compared the two, I am decided that the much smaller and differently colored *T. thoracica*, is distinct. And I see nothing surprising in this circumstance, since the Cuban Bombycidæ are entirely distinct from our U. S. species of the Family with but one exception, and that—*Utetheisa bella*—one about which much remains to be ascertained. Perophora, another Psychid genus, is represented by a peculiar and amply distinct species—*P. packardii*, *m.*—the validity of which has been since supported by Dr. Herrich-Schaeffer, who has examined specimens of *P. packardii*, sent by Dr. Gundlach.

The remarks of Mr. Walsh on this subject in the November number of the "Practical Entomologist," have also been shown to me. I am sorry to see Mr. Walsh's statement that Dr. Clemens communicated to him by letter, that "Mr. Grote gave a third name to this same species, (i. e. *Thyr. ephemeræformis*, *Steph.*—*O. coniferarum*, Harris, teste Clem.)—*Hymenopsyche thoracicum*." In this case we have Dr. Clemens' own printed Paper to refer to, and can see, that Dr. Clemens merely *presumed*, or *suggested*, that the Cuban was not sufficiently distinct from the United States species; which latter I certainly never determined as "*Hymenopsyche thoracicum*," but, under Dr. Harris' specific name, simply referred the species to the same genus with *H. thoracicum*, as above explained. With this reference Dr. Clemens does not find fault, rather the reverse, since he says I "very properly" changed the generic determination of *Æceticus coniferarum* of Drs. Harris and Packard. Under the circumstances also, that "Stephens' specimen was doubtless nearly or quite denuded, the antennæ were injured and the hind wings were almost entirely destroyed," much might be properly urged to support both my genus and Dr. Harris' species, although, it is added, that "Stephens' generic description is sufficiently graphic, together with the description and figure given, to identify it at once with *Hymenopsyche* of Grote." The generic characters given by Stephens, become much less trenchant when the species afterwards described and figured by Westwood under *Oiketicus*, and subsequently partially separated under distinct genera by Mr. Walker, are considered; indeed, on comparing all these generic diagnoses in the British Museum Lists, I considered at the time, that our United States form had been hitherto unnoticed by Authors, and I was strengthened in my belief by Dr. Harris' reference of the species to *Æceticus*. Under these impressions I was careful to give a detailed description of the structural characters of our species, and in particular I endeavored to bring out the neurological features, which seemed to be peculiar, and I am happy to see my generic diagnosis commended in this respect by Dr. Clemens, so that I am not unreasonable in supposing my determination to have been of some assistance in the matter. Leaving, however, the case as satisfactorily settled by Dr. Clemens, I desire to notice Mr. Walsh's remarks briefly in conclusion. Considering on what extraordinary grounds Mr. Walsh has separated certain of our Lepidoptera as distinct species, the remarks of this gentleman come with peculiar bad grace when they take the

direction of an admonishment to others to exercise care in scientific discriminations. The species which I allude to as improperly separated by Mr. Walsh, are as follows:—*Halesidota antiphola*, Walsh (= *Hal. tessellaris*, *Smith* sp., described "long after" *Smith's* "time"); *Halesidota harrisii*, Walsh (= *Halis. tessellaris*, *Walsh*, non *Smith* sp., apud *Walsh*, but in reality identical, inasmuch as the imago are undistinguishable, and if you rear the moths from larvæ with "black" thoracic tufts, you have one, if from larvæ with "orange-colored" thoracic tufts, you have the other of these so-called "*species*," which Mr. W. has "shown" to be "absolutely undistinguishable" in the imago state, and yet has separated as distinct species, "in process," too, "of formation"): *Sphingicampa* (n. gen.) *distigma*, Walsh (= *Dryocampa bicolor*, *Harris*, *Walsh*). It is, in fact, no less a person than Mr. Walsh himself, who, in describing the above-mentioned species of *Halesidota*, has turned "varieties" into "species," and who, when erecting the genus *Sphingicampa*, manufactured actually two "genera" out of one "species." That it was in an attempt to palm off the Darwinian theory upon Entomologists, that the above errors were committed, and that the detection of these mistakes recoils upon that theory through its ill advised supporter, will be the only gratifying features attending these synonyms to those scientists, who have been led through their studies to reject the Developmental theory of Creation. But Mr. Walsh's critical insinuations in the article here alluded to, are not palliatives for his own short comings, however much he may have desired they should be, while in order to make as much of them as possible. Mr. Walsh has allowed himself to distort the true facts of the case, which are these: Dr. Packard cited *Harris's* MS. determination of the species, and so cannot be said to have "named" it, and I, as stated above, never described "this same species" as "*Hymenopsyche thoracicum*," neither did Dr. Clemens charge me with doing so, Mr. Walsh, in all these instances, to the contrary notwithstanding.

However, the position of Mr. Walsh, with regard to the validity of the above cited genera and species and to the success of the "Entomological speculation" dependent on that validity, may be compared with that of Meneceates in the matter of bee-bread, a substance which was held by this Ancient to be a flower. Pliny (*Hist. Nat. Lib. XI, c. 7*), in recording this opinion of Meneceates, somewhat summarily disposed of both it and its Author, in adding: "but no one says so but him." Were Mr. Walsh's *Dryocampa bicolor*, and *Sphingicampa distigma*, really and in fact distinct forms, it would appear that an important weapon were thereby placed in the hands of the Derivatists. But, since the statement of such distinctiveness is the result of erroneous assumption and supposition, the supposed species may be considered as a sort of entomological Professor Teufels-dröckh of Weissnichtwo, or Mrs. *Harris*. One of Mr. Walsh's Papers, that on Phytophagic Varieties and Phytophagic Species, contains erroneous statements which inferentially tell against the value of Mr. Walsh's evidence in such matters. For instance, a point is made by the statement that *Tropæa luna*, feeds only on "walnut and hickory," which is incorrect, since this species feeds commonly in certain localities, on the gum, *L. styraciflua*. In Putnam County, N. Y., last October, Mr. Robinson and myself, while "chestnutting," knocked a full-grown larva of *T. luna*, from the branches of a chestnut tree standing by itself in an open field; so that the "chestnut" is also a food-plant of this species. *Platysamia cecropia*, feeds on an immense variety of trees and shrubs of both native and foreign origin. In fact our *Attaci*, a sub-family of typical *Bombycidæ*, are essentially polyphagic,

and, as a whole, this habit is characteristic of the entire Family. The Dryocampini do not feed on oaks to the extent that they may be called querciphagic: *Anisota* (*Dryocampa*, Harris) is found also on Pines on which *Citheronia sepulcralis* feeds, while its congener, *C. regalis*, feeds on plants as botanically dissimilar as *Cephalanthus occidentalis* and the different species of *Carya*. *Eacles imperialis*, has been several times taken by me on the horse-chestnut, a tree of European origin. We owe perhaps, the creation of the new genus and species by Mr. Walsh, to the circumstance that the problematical larva, (*D. bicolor*, *Walsh*) was found on oak, and hence, according to Mr. W.'s reasoning, must be a *Dryocampa*, and being *Dryocampa*, must have simple antennæ in the ♀. In these same Papers, the narrative of Mr. Walsh's breeding experiments with *Halisidota* larvæ is a perfect farce, and makes the subject unnecessarily ridiculous. If it shows anything, beyond the style of Mr. Walsh's breeding-cages, it is, that certain Lepidoptera, when in a half-grown larval state, cannot be changed from their original food-plant with perfect impunity—a fact which has been known for some time—and that *Halisidota tessellaris* is one of these. Sweeping statements should not be made from the results of any single isolated personal experience, and in future, Mr. Walsh would do well to consult additional evidence and to repeat his experiments before venturing on wholesale assertions, on the accuracy of which much depends. It is true, that where evidence is offered by other parties, Mr. Walsh has a cool way of rejecting it, where such rejection suits his purposes, as in the instance of Mr. Ridings' testimony as to the existence of intermediary (♀) individuals between *P. turnus* and var. *glaucus*. That these exist, is a notorious fact; such an one has been long ago figured by Esper, and a number of intermediary (♀) individuals, with the wings more or less sprinkled with yellow scales, have occurred to me in New York State. One taken by Mr. Ridings in Georgia, shows irregular patches of yellow scales on the upper surface of primaries. The geographical limits assigned by Mr. Walsh to the melanitic form, *glaucus*, are also not strictly correct. Again, the manner in which Dr. Harris' description of the larva of *H. tessellaris*, is accounted for, in the Paper before alluded to, is an illustration of another method of treatment which direct evidence, where such conflicts with his theories, receives at the hands of Mr. Walsh, who has not been stopped in this instance by Dr. Harris' known reputation for accuracy as an Entomological observer, but has carried his remarks to the verge of unjustifiable aspersion. While thus, on the one hand, *positive* evidence is overlooked or distorted by Mr. Walsh, *negative* evidence is at times accorded undue weight by him. So, because *Leucania unipuncta*, is omitted in a book on the Insects injurious to Vegetation in the Eastern States, the species is boldly stated not to occur there, (a manner of proving an *alibi*, which would at least be a novel one in a Court of Justice,) and a problematical larva is *determined* as that of *Dryocampa bicolor* by the "process of exhaustion." A proper redress of the wrongs which Lepidopterological Science has received at the hands of Mr. Walsh, has not been offered, and is, perhaps, not to be expected from him—*Nescio quo fato res mala facta bona est.*